3) a)

$T(n) = T(n/2) + n$

$T(1) = 1$

$T(n) = T(n/2) + n$

$T(n/2) = T(n/2^2) + n/2$

$T(n/3) = T(n/2^3) + n/2^2$

↓

$T(n) = \underbrace{T(n/2^k)}_{T(1)} + n/2^{k-1}$

$\frac{n}{2^k} = 1$

$n = 2^k$

$k = \log_2 n$

$T(n) = 1 + \sum_{i=0}^{\log n} \frac{n}{2^i}$

$T(n) = 1 + n \sum_{i=0}^{\log n} \frac{1}{2^i}$

$\sum_{i=0}^{\log n} \frac{1}{2^i}$ → Somatório nunca será > 2.

$T(n) = 1 + n \cdot \sum_{i=0}^{\log n} \frac{1}{2^i}$

↳ Domina o Somatório

Complexidade = $O(n)$